

# Innovation of tennis teaching at College's PE major based on multiple intelligence theory

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## Abstract

At present, the popularity of tennis in colleges and universities is gradually deepening, when the traditional teaching theory of tennis is hard to meet the actual teaching requirement of tennis. Under this background, this paper is going to give a deep research and analysis on tennis teaching at colleges and universities, take multiple intelligence theory as the basic theory guidance, and adopt the methods of literature review, survey report and math statistics analysis to explore the objective law of tennis teaching at China's colleges and universities. Through the research, this paper finds out that the guidance of multiple intelligence theory can promote tennis teaching efficiency of at college's PE major. Therefore, it can be seen that adopting teaching method of multiple intelligence can promote students' activity accordingly and improve students' comprehensive quality roundly in the teaching process of tennis at college's PE major.

*Keywords:* multiple intelligence theory, College's PE major, tennis teaching, innovation

## 1 Introduction

Until now, colleges in China still stay in the primary stage at applying multiple intelligence theory for tennis teaching. In the meantime, traditional teaching method of tennis is already hard to meet the actual teaching requirement of tennis, which is rapidly developing. In this context, how to adopt effective tennis teaching method, train tennis talent with high comprehensive quality and promote students' integrated development has already become a focus issue of for researches of tennis teaching. At present, the research work of tennis teaching at colleges' PE major based on multiple intelligence theory has made progresses in certain degree [1-3]. Bellanca, an America educator, made rules of assessment of multiple intelligence training in his book, *Multiple Assessments for Multiple Intelligence*. Armstrong [4, 5], a German educator, gave a specific analysis the importance of various elements that consist the teaching in his book, *Multiple Intelligence in the Classroom*. In addition, Zhong Zhixian, an educator in China, proposed the importance that the students should be taken as the center in the teaching process and the teaching should be accordance with students' characteristics.

## 2 Connotation of teaching by multiple intelligence theory

Multiple intelligence theory is proposed by Howard, a scientist in America, who held the thought that each person's intelligence is equipped with own unique character and each student has both skilled field and unskilled field. In his opinion, each student has own unique character. The proposition of multiple intelligence theory puts forward new development idea for teaching domain, which is, in the process of teaching students, the characteristics of students should receive full attention and they should be taught accordingly to promote teaching effect [6]. The proposition

of "Multiple intelligence theory" is new challenge for teachers engaged in tennis teaching at colleges' PE major. Through the guidance of multiple intelligence theory, the teachers can find out a new path to cultivate students and help them grow at the most extent. Under normal circumstances [7], the assessment of teaching's effect with applying multiple intelligence theory should consider cultivation of students' multiple abilities [8, 9]. In addition, acquired results should be analyzed by mathematical statistics, for which the main analysis methods are:

1) Method of F test:

$$F = \frac{n_1 n_2 \Gamma\left(\frac{n_1 + n_2}{2}\right) x^{\frac{n_1}{2} - 1}}{\Gamma\left(\frac{n_1}{2}\right) \Gamma\left(\frac{n_2}{2}\right) (n_1 x + n_2)^{\frac{n_1 + n_2}{2}}}. \quad (1)$$

2) Analysis of normal distribution:

$$f(x) = \frac{1}{\sqrt{2\pi}\sigma} \exp\left(-\frac{(x-\mu)^2}{2\sigma^2}\right). \quad (2)$$

3) Chi-square test:

$$K^2 = \frac{n(ad-bc)^2}{(a+b)(c+d)(a+c)(b+d)},$$

among it,  $n=a+b+c+d$  is sample size;

(4)  $t$  test:

$$t = \frac{|\bar{d} - \mu_d|}{s_d^-} = \frac{\bar{d}}{s_d / \sqrt{n}}, \quad v = n - 1. \quad (3)$$

In the process of test, the results of research and analysis would be substituted into the test formula to receive the analysis and exploration of application effect of teaching by multiple intelligence theory.

### 3 Comparison between teaching of multiple intelligence theory and traditional teaching

#### 3.1 CHARACTERISTICS OF TRADITIONAL TEACHING

In the application process of traditional teaching method, the teaching should adopt relatively singular teaching method and standard of achievement evaluation in the process of assessment. Under this teaching mode, students' activity is hard to be motivated and their subjective status in learning hard to be extruded effectively [10]. In general, traditional teaching method excessively focuses on evaluation of one certain aspect of students, but neglects cultivation of their general ability. Therefore, students' quality cannot be promoted accordingly and their leaning potential is hard to be fully implemented.

#### 3.2 CHARACTERISTICS OF TEACHING BY MULTIPLE INTELLIGENCE THEORY

Introducing the teaching method with multiple intelligence theory into the process of tennis teaching at colleges' PE major can help to explore new teaching mode constantly and achieve the idea of "student-oriented". Targeted teaching method can be made out according to each student's actual characteristic. Then, the original teaching mode can be transferred to guide teaching method from transmission teaching method to create pleased studying atmosphere for students. In the teaching process of applying multiple intelligence theory, a kind of easy and pleased learning atmosphere can be created, which is beneficial to students' integrated development and to promote students' independent learning ability.

### 4 Teaching status of tennis at colleges' pe major at present

#### 4.1 TEACHING OBJECTIVE OF TENNIS AT COLLEGES' PE MAJOR

At present, the teaching objective of tennis at colleges' PE major is mainly concentrated in follow aspects: firstly, to cultivate students' basic tactical literacy; secondly, to cultivate students' ability of tennis sparring and instruction; thirdly, to cultivate students' ability of teaching tennis. In the meantime, there exists differentiation of popularization in three teaching objectives. Through exploration and analysis on questionnaire of schools that carry out tennis teaching in one college town, this paper finds out the rough distribution of teaching objective of tennis at colleges' PE major, which is presented in Table 1:

TABLE 1 Questionnaire form of teaching objective of tennis at colleges' PE major

Teaching objective	Number of people
Basic accomplishment of technique and tactics of tennis	12
Tennis sparring	13
Tennis teaching	76

It can be seen that the tennis teachers holding the teaching objective of teaching students to conduct tennis

teaching accounts for the vast majority, which takes up about  $X\% = 76 / (12 + 13 + 76) \times 100\% = 75.25\%$ . According to this situation, it can be concluded that most of China's tennis teachers at colleges' PE major are taking the cultivation objective, which is training students' ability of teaching tennis, in the process of setting teaching objectives. This confirms that the teaching objective of tennis at current colleges' PE major is relatively singular, focusing on cultivating students' ability of one aspect, but neglecting comprehensive quality of other aspects of students.

#### 4.2 CONTENT OF TENNIS TEACHING AT COLLEGES' PE MAJOR

Content of tennis teaching at colleges' PE major is the direct reflection of the teaching objective. Whether the teaching content is excellent or not will directly determine the teaching quality of tennis teaching at colleges' PE major. Whether the teaching content is with enough scientificity or not will have influence on students' learning efficiency and learning effect. At present, the content of tennis teaching at colleges' PE major mainly include theoretical teaching content, technical teaching content and design and arrangement of teaching content.

Through research and statistics of tennis teaching in one college town, main theoretical teaching content in tennis teaching is presented in Table 2:

TABLE 2 Theoretical teaching content in tennis teaching at colleges' PE major

Teaching period	Theoretical teaching content
the first period	Knowledge of basic theory of tennis
the second period	History and future development trend of tennis
the third period	Requirements of technique and tactics of tennis
the fourth period	Various counting rules and foul rules of tennis

Teaching hour arrangement of these kinds of teaching content is approximately distributed as follows:

TABLE 3 Arrangement of teaching hour of theoretical teaching content of tennis teaching at colleges' PE major

Teaching content	Training method of tennis	Rules of tennis	History of tennis	Requirements of technique and tactics of tennis
Teaching hour (h)	15	11	3	19

From this, it can be seen that in the arranging process, the teachers usually focus on the training of technique and tactics of tennis and training method. This also certifies that it may take a part for the whole in the process of introducing tennis's content. This is that thinking only introducing basic training method and technique and tactics of tennis would be enough, but neglecting cultivation and promotion of students' comprehensive quality.

Through research and statistics of tennis teaching in one college town, main technical teaching content in tennis teaching is presented in Table 4:

TABLE 4 Arrangement of teaching hour of technical teaching content of tennis teaching at colleges' PE major

Technical teaching content	Strike with forehand and backhand	Serve	Footwalk	Overhead smash	Pick the ball
Teaching hour (h)	30	30	30	10	10

From Table 4, technical teaching of tennis at colleges' PE major mainly concentrates on some basic teaching among tennis teaching. For some additional techniques with high technical requirement, they do not occupy many teaching hours. It is observed that the current technical teaching content is quite accordance with the requirements of tennis teaching.

Through research and statistics of tennis teaching in one college town, quantitative distribution being adopted in tennis teaching at colleges' PE major is presented in Table 5.

TABLE 5 Questionnaire form of teaching method of tennis teachers at colleges' PE major

Using status of teaching method	Number of tennis teachers
Using a fixed teaching method	15
Using 1-3 different teaching method frequently	13
Setting targeted teaching method according to students' actual situation	7

Through inquiring the data in Table 5, current tennis teaching at colleges' PE major still lacks fixable mastering of students' actual situation, and there is no formulation and application of teaching method according to students' actual characteristics, which hardly implements the value and function of teaching method.

## 5 Innovation types of tennis teaching in colleges under the perspective of multiple intelligence theory

### 5.1 PROMOTING INNOVATION OF TEACHING THEORY OF TENNIS IN COLLEGES

In the process of innovating teaching theory of tennis in colleges, it fully implements the advantage of democratizing teaching. In the process of cultivating students' intelligence multiply, it should pursuit cultivation of personality and promotion of students' comprehensive development based on equal and harmonious teacher-student relationship. Specifically, in the process of conducting tennis teaching in colleges, the teachers cannot emphasize on the cultivation of technique and tactic of students, but also on the diversification of teaching content, enriching teaching content and choosing appropriate teaching method according students' characteristics to promote the teaching efficiency.

### 5.2 EXPANDING TEACHING OBJECTIVE OF TENNIS IN COLLEGES

In the process of tennis teaching in colleges, only clearing teaching objective can guarantee successful implementation of teaching process. In the meantime, teaching objective is the starting point and foothold of all teaching works. According to the problem that the goal setting of tennis

teaching in colleges is too singular, the colleges should gradually expand teaching objective of tennis and formulate corresponding teaching plans. Specifically, this society needs the student with specialty. In the process of cultivating students, if the cultivation is singular and only emphasizing on one side, the students being cultivated are hard to satisfy actual need of the society. Therefore, in the process of tennis teaching, it should give full attention to cultivation of multiple intelligences, promotion of students' intelligences of visual-space relation, language and interpersonal communication, to lay a good foundation for promoting students' comprehensive development.

### 5.3 ENRICHING TEACHING CONTENT OF TENNIS IN COLLEGES

In the perspective of multiple intelligence theory, tennis teaching in colleges should start from each teaching stage to cultivate students' multiple intelligence progressively. In detail, in the process of conducting theoretical teaching of tennis in colleges in the view of multiple intelligence theory, the teachers can adjust the emphasis of teaching content according to students' actual condition, let the students communicate in teams and promote students' language intelligence and interpersonal communication intelligence. In the process of conducting technical teaching of tennis in colleges in the view of multiple intelligence theory, the teachers should let the students demonstrate, while other students evaluating and appreciating, to promote students' capacity of self-adjustment and self-observation.

### 5.4 IMPROVING TEACHING METHOD OF TENNIS IN COLLEGES

In the perspective of multiple intelligence theory, tennis teaching in colleges should fully value the difference between students' intelligence and characteristic and choose proper teaching method for students' development. In the above text, we can see that many teachers did not adopt individualized quality education in the field of tennis teaching in current colleges. In this background, students' potential is hard to be motivated, nor can the best teaching effect be implemented. According to this situation, in the process of improving teaching method of tennis, it should fully value the individual difference between students, choose targeted teaching method of tennis and promote teaching efficiency of tennis teaching.

## 6 Conclusion

In conclusion, in the process of tennis teaching at colleges' PE major, students' personnel characteristics should be analyzed and concluded carefully and be under the theoretical support of multiple intelligence theory to set realistic teaching objective, plan realistic teaching content and choose realistic teaching method, to educate students accordingly and to promote students' comprehensive development. Under the guidance of multiple intelligence, it assesses the students' characteristics accordingly, finds out teaching method of promoting students' development and reflects the superiority of multiple theory.

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